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| * http://textbooks.cpm.org/images/cc3/chap05/CC3_5.1.1title.png
* So far in this course, you have used your Equation Mat and/or symbols to find solutions for all types of linear equations with one variable. Today you will learn how to apply these skills to solving linear equations with two variables.
* **5-1.** You now have a lot of experience working with equations that compare two quantities. For example, while working with the height of a tree, you found the relationship *y* = 4*x* + 5, which compared *x* (the number of years after it was planted) with *y* (its height in feet). Use the equation for this tree to answer the questions below.
	1. What was its starting height? How can you tell from the equation?
	2. What was its growth rate? That is, how many feet did the tree grow per year? Justify your answer.

**5-2.** CHANGING FORMShttp://textbooks.cpm.org/images/cc3/chap05/CC3_5-2.pngYou can find the growth rate and starting value for *y* = 4*x* + 5 quickly, because the equation is in *y* = *mx* + *b* form. But what if the equation is in a different form? * 1. The line −6*x* + 2*y* = 10 is written in **standard form**. Can you tell what the growth rate of the line is? Its *y*-intercept? Predict these values.
	2. http://textbooks.cpm.org/images/cc3/common/+1-1.pngThe equation −6*x* + 2*y* = 10 is shown on the Equation Mat at right. Set up this equation on your Equation Mat using tiles. Using only “legal” moves, rearrange the tiles to get *y* by itself on the left side of the mat. Record each of your moves algebraically.
	3. Now use your result from part (b) to find the growth factor and *y*-intercept of the line −6*x* + 2*y* = 10. Did your result match your prediction in part (a)?
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**5-3.** Your teacher will assign you one of the linear equations listed below. For your equation: * 1. Use [algebra tiles](http://www.cpm.org/technology/general/tiles/?tiledata=a2x__boy__La) to set up the equation on your Equation Mat.
	2. Using only “legal” moves, rearrange your tiles to create an equation that starts with “*y* = …” Be sure to record all of your moves algebraically and be prepared to share your steps with the class.
	3. What is the growth factor of your line? What is the *y*-intercept? How can you tell?
1. 2*x* + *y* = 3*x* − 7
2. *x* + 2*y* = 3*x* + 4
3. 3*y* + 2 = 2*y* − 5*x*
4. 2(*y* − 3) = 2*x* − 6
5. 5 − 3(*x* + 1) = 2*y* − 3*x* + 2
6. *x* − (*y* + 2) = 2(2*x* + 1)

**5-4.** Solve each of the following equations for the indicated variable. Use your Equation Mat if it is helpful. Write down each of your steps algebraically. * 1. Solve for *y*: 2(*y* − 3) = 4
	2. Solve for *x*: 2*x* + 5*y* = 10
	3. Solve for *y*: 6*x* + 3*y* = 4*y* + 11
	4. Solve for *x*: 3(2*x* + 4) = 2 + 6*x* + 10
	5. Solve for *x*: *y* = −3*x* + 6
	6. Solve for *p*: *m* = 8 − 2(*p* − *m*)
	7. Solve for *q*: 4(*q* − 8) = 7*q* + 5
	8. Solve for *y*: *x*2 + 4*y* = 2(3*x* − 6 − *x*) + *x*2
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